

The attempt will be continued further to purify and to analyze this substance.

Summary. A substance which acted destructively upon the myelin sheaths of rat spinal cord could be demonstrated in the urines of patients suffering from disseminated sclerosis. It was more frequently observed during periods of exacerbations than during periods of remissions. Similar myelolytic substances were also observed in cases of post-encephalitic Parkinsonism, but they were absent in syphilis and in other diseases of the central nervous system. This myelolytic substance could be isolated from the concentrated urines by extraction with dioxane.

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**Relation of Blood Lactic Acid and Acetone Bodies to Uric Acid
in Pre-Eclampsia and Eclampsia.***

N. K. SCHAFER, S. B. BARKER, W. H. SUMMERSON AND
H. J. STANDER.

*From the Departments of Obstetrics and Gynecology, Medicine and Biochemistry,
Cornell University Medical College and the New York Hospital.*

Pre-eclampsia is a disease of the last trimester of pregnancy characterized by hypertension, albuminuria and edema. It may develop into eclampsia, which is distinguished from the pre-eclampsia by the occurrence of convulsions. Hyperuricemia is the most consistent blood chemical finding in these diseases.^{1, 2} It has been attributed to a disturbance of uric acid metabolism in the liver. Quick³ has suggested that it may result from an elevated blood lactic acid known to occur in eclampsia,⁴⁻⁷ because lactic acid ingestion causes uric acid retention. Evidence against this theory is that the blood lactic acid in eclampsia rises mainly after the convulsions,^{5, 6} whereas the blood uric acid is continuously elevated.

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¹ Cadden, J. F., and Stander, H. J., *Am. J. Obst. and Gynec.*, 1939, **37**, 37.

² Schaffer, N. K., and Stander, H. J., *Proc. Soc. Exp. Biol. and Med.*, 1940, **45**, 180.

³ Quick, A. J., *J. Biol. Chem.*, 1935, **110**, 107.

⁴ Stander, H. J., Radelet, A. H., *Bull. Johns Hopkins Hosp.*, 1926, **38**, 423.

⁵ Zweifel, E., and Scheller, R., *Zentralbl. Gynäkol.*, 1927, **51**, 655.

⁶ Bokelmann, O., *Arch. Gynäkol.*, 1927, **129**, 802.

⁷ Stander, H. J., and Cadden, J. F., *Bull. Johns Hopkins Hosp.*, 1930, **47**, 382.

The level of the blood lactic acid in pre-eclampsia would be critical evidence for or against this theory because there are no convulsions to affect the lactic acid. Previous evidence on the blood lactic acid in pre-eclampsia^{6, 7, 8} has been conflicting; therefore we have re-investigated this problem. Blood acetone bodies were also determined, because Quick⁹ has shown that acetoacetic acid likewise causes uric acid retention.

Methods. Blood was collected in bottles containing 2 mg each of potassium oxalate and sodium fluoride per cc of blood, the latter added to inhibit lactic acid formation from glucose. Whole blood tungstic acid filtrates were prepared by adding 1 cc of 10% sodium tungstate per cc of blood and slowly adding 8 cc of N/12 H₂SO₄. Lactic acid was determined by the colorimetric method of Barker and Summerson.¹⁰ Total acetone bodies were determined[†] by distillation from the acidified blood filtrate after bichromate oxidation and determination of the distilled acetone by the Behre method.¹¹ Uric acid was determined by the Folin method.¹²

Results. Ten normal pregnancies in the last trimester, 7 cases of pre-eclampsia and 2 cases of eclampsia were studied (Tables I and II). The average blood lactic acid in antepartum normal pregnancy was 11.0 mg % (9.1-12.3) and in antepartum pre-eclampsia was 12.9 mg % (8.0-18.6). The average blood acetone bodies in normal pregnancy was 1.3 mg % (<0.1-2.7) and in pre-eclampsia were 0.8 mg % (<0.1-2.6). The average blood uric acid in pre-eclampsia was 4.5 mg % and in normal pregnancy was 3.0 mg %. No significant change in either blood lactic acid or acetone bodies was associated with the elevated blood uric acid in pre-eclampsia.

The two cases of eclampsia were included to indicate the effect of convulsions on the blood constituents. In the intrapartum case in the first stage of labor and 25 minutes after a convulsion the blood lactic acid was 57.1 mg % as compared with 9.6 mg % for a corresponding intrapartum normal pregnancy. Winkler and Hebler¹³ have reported that the average blood lactic acid is about doubled in early normal labor, therefore, a part of this increase was probably associated with labor. We found no such increase in lactic acid in the intrapartum normal pregnancy, but obviously no conclusion can be drawn from a single case. In the postpartum case 2½ hours

⁸ Stander, H. J., and Radelet, A. H., *Bull. Johns Hopkins Hosp.*, 1926, **39**, 91.

⁹ Quick, A. J., *J. Biol. Chem.*, 1932, **98**, 157.

¹⁰ Barker, S. B., and Summerson, W. H., *J. Biol. Chem.*, 1941, **133**, 535.

[†] To be published elsewhere by W. H. S.

¹¹ Behre, J. A., *J. Biol. Chem.*, 1940, **136**, 25.

¹² Folin, O., *J. Biol. Chem.*, 1933, **101**, 111; 1934, **106**, 311.

TABLE I.
Blood Constituents in Normal Pregnancy. Values in mg%.

	Lactic acid	Total acetone bodies (as acetone)	Uric acid
1. Antepartum	12.3	1.7	2.4
2. "	11.1	1.5	2.4
3. "	11.5	1.9	1.9
4. "	10.6	<0.1	2.2
5. "	10.8	1.5	4.6
6. "	9.1	0.9	3.6
7. "	12.1	2.7	4.2
8. "	10.2	0.5	2.6
Avg	11.0	1.3	3.0
1. Intrapartum	9.6	7.2	3.1
2. Postpartum (6 hr)	12.1	0.4	2.1
Avg	10.9	3.8	2.6

TABLE II.
Blood Constituents in Pre-eclampsia and Eclampsia. Values in mg%.

Case	Lactic acid	Total acetone bodies (as acetone)	Uric acid	Min. after convulsion
1. Mild pre-eclampsia, antepartum	10.7	1.8	5.6	
2. " " "	18.6	<0.1	3.5	
3. " " "	10.8	<0.1	3.9	
4. " " "	8.0	2.6	4.9	
5. Severe " "	17.6	0.2	4.9	
6. " " "	16.2	0.3	3.7	
7. " " "	8.5	0.8	5.3	
Avg	12.9	0.8	4.5	
1. Eclampsia, intrapartum	57.1	1.3	5.1	25
2. " " , postpartum (7 hr)	16.0	3.1	5.1	2½ hr
Avg	36.6	2.2	5.1	

after a convulsion the blood lactic acid was 16.0 mg % as compared with 12.1 mg % for a normal pregnancy at about the same postpartum time of 6-7 hours, indicating that the blood lactic acid was already close to normal.

Our present data on the blood acetone bodies in eclampsia are insufficient for a conclusion. It has been previously reported^{6, 7} that they are increased by the convulsions. The high value of 7.2 mg % in the intrapartum normal pregnancy indicates that they are increased by labor, a finding that has been reported before.¹³

Discussion. Inasmuch as there is no significant difference in the

¹³ Winkler, H., and Hebeler, F., *Arch. Gynäkol.*, 1939, **168**, 64.

blood lactic acid and acetone bodies between pre-eclampsia and normal pregnancy, the hyperuricemia of pre-eclampsia can not be attributed to an elevation of these constituents. It is true that there are 3 relatively high lactic acid values in the pre-eclamptic group, but the average value is only 17% above that for the normal pregnant group. Moreover, 2 of these high lactic acid values are associated with the 2 lowest uric acid values and three of the highest uric acid values are associated with the lowest lactic acid values.

Since the hyperuricemia of pre-eclampsia is not due to an elevation of blood lactic acid or acetone bodies, it follows that the hyperuricemia of eclampsia also is not primarily due to this because pre-eclampsia and eclampsia are believed to be a single disease entity. However, a rise of these constituents in the blood due to the convulsions in eclampsia may possibly augment the pre-existing hyperuricemia.

Summary. The average blood lactic acid in 7 cases of pre-eclampsia was 12.9 mg % (8.0-18.6) as compared with 11.0 mg % (9.1-12.3) in 8 cases of normal pregnancy. The average blood acetone bodies in the pre-eclamptic cases was 0.8 mg % (<0.1-2.6) as compared with 1.3 mg % (<0.1-2.7) for normal pregnancy. The average blood uric acid for the pre-eclamptic group was 4.5 mg % and for normal pregnancy was 3.0 mg %. The rise in blood lactic acid in eclampsia occurs mainly after convulsions. The hyperuricemia of pre-eclampsia and eclampsia can not be primarily attributed to an elevation of blood lactic acid or acetone bodies.

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A New *Salmonella* Type, *Salmonella illinois*.*

P. R. EDWARDS AND D. W. BRUNER.

From the Department of Animal Pathology, Kentucky Agricultural Experiment Station, Lexington, Ky.

The *Salmonella* type to be described is represented by 7 cultures isolated from 3 outbreaks of animal disease. *Salmonella illinois* has been recognized in cultures isolated from hogs in Illinois by Dr. Robert Graham, from Hungarian partridges in Michigan by Miss

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